U.S. Fusion Energy Sciences Program

Presented to

19th Executive Secretaries Meeting
U.S.—Japan Fusion Bilateral
via televideo

By

Michael Roberts
Director of International Activities
Office of Fusion Energy Sciences
Office of Science
Department of Energy

April 19, 2001

Office of Fusion Energy Sciences

N. Anne Davies
Associate Director of Science for Fusion Energy Sciences

Al Opdenaker — Executive Assistant
Shahida Afzal — Personal Assistant
Suellen Velthuis — Visual Information Specialist

International Activities
Sandy Newton** — Personal Assistant
Michael Roberts,** Director
Debra Frame — Administration

Research Division

John Willis, Director
Marty Carlin, Personal Assistant/Office Manager
T.J. Moore — Support Staff
John Sauter — Program Support Specialist

Ron McKnight♦ — IFE, University Liaison, Basic Plasma Science
(Position Vacant) — Exploratory Concepts (Alts)
Curt Bolton — Next Step Options, Theory
Michael Crisp — Atomic Physics, HBCU
Rostom Dagazian — C-MOD, Theory
William Dove — ARIES System Studies
Steve Eckstrand — Theory Team Leader
Chuck Finfgeld — University Tokamaks,
Arnold Kritz* — Modeling and Simulation
Darlene Markevich — Diagnostics, Education, Outreach
Erol Oktay — DIII-D, International Tokamaks
Don Priester — NSTX
Walt Sadowski — Theory

Facilities & Enabling Technologies Division

Michael Roberts,** Director
Sandy Newton,** Personal Assistant/Office Manager

Warren Marton♦ — Chair, F&ETD Budget Committee; Fac. Ops/Expts, VLT, Magnets
Sam Berk — V-Chair, F&ETD Budget Committee, PFC, Plasma Chamber Sys, Materials
Gene Nardella — Tritium and Safety, Education; Fac. Ops/TFTR D&D/Expts/GPP and IFE Technology
T.V. George — Heating and Fueling, SBIR/STTR, Fac. Ops/GA ECH, US-JA PCM
Ray Schwartz* — ESCH, Fac. Ops/Expts
(2 Position Vacancies)

Research Division personnel in leading roles within F&ETD Program:

Next Step Options Leader: Curt Bolton

Systems Studies Leader: Bill Dove

(All F&ETD staff part of Budget Committee)

*On Call from SC-80

♦Principal Acting Director *On Assignment (Lehigh Univ.) **Dual Capacity ‡Support Staff

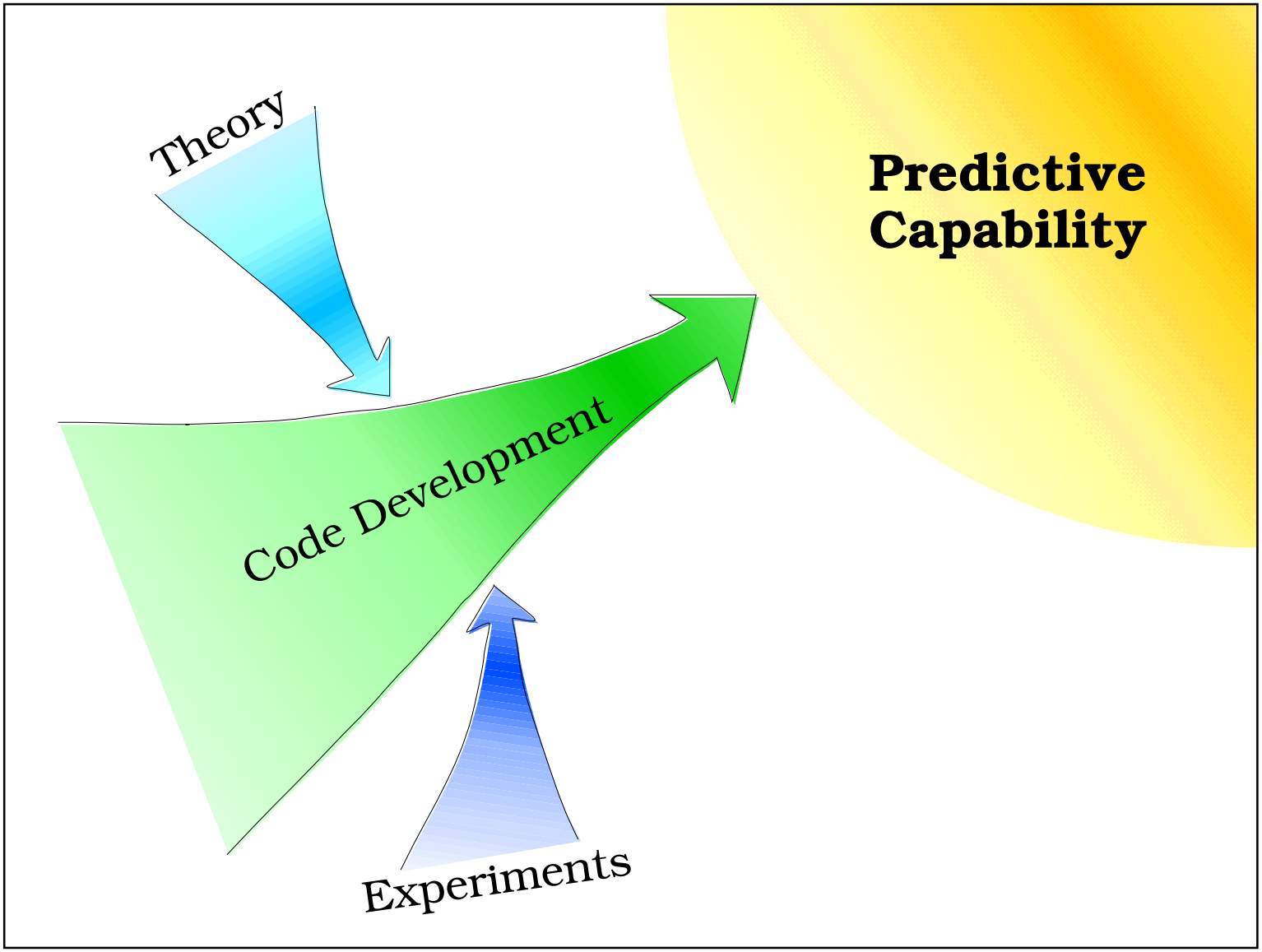
U.S. Fusion Energy Sciences Program Mission

"Advance plasma science, fusion science, and fusion technology-- the knowledge base needed for an economically and environmentally attractive fusion energy source."

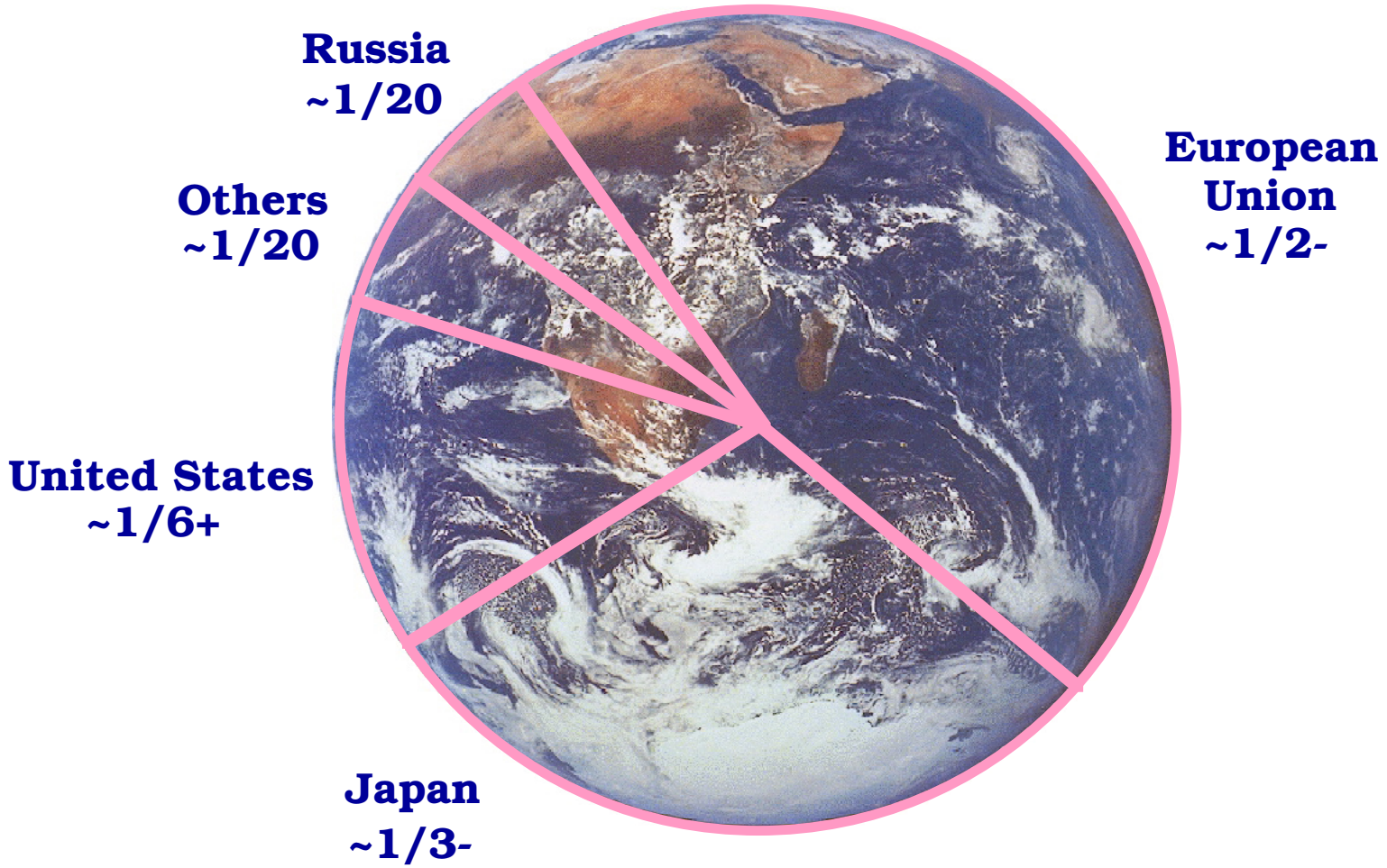
U.S. Management of U.S. - JA Bilateral Fusion Activities

<u>Planning</u>	
M. Roberts	Director, International Activities; U.S. Executive Secretary
R. McKnight E. Oktay	Fusion Physics Planning Committee (FPPC)
T.V. George	Planning and Coordinating Meeting (PCM) on Fusion Technology
D. Frame	Administrator
<u>Research</u>	
M. Roberts	Director, Facilities and Enabling Technologies Division
J. Willis	Director, Research Division
Key U.S. Persons	Office of Fusion Energy Sciences and Field Institutions

Objective of the U.S. Fusion Energy Sciences Program



World Magnetic Fusion Effort (2000)



[Relative levels based on published budgets, rough estimates of personnel not included in budgets and rough conversions to dollars]

Magnetic ***Fusion Energy (MFE)***

- Selected Issues of Current Interest to US
  - –Completion of TFTR D&D by the end of FY02
  - –Completion of TSTA research in this June
  - –Study of burning plasma physics issues
  - –Addressing international physics database issues
  - –Consideration of compact stellarator experiments
  - –Overcoming gyrotron diamond window problems
  - –Agreement on Jupiter II

Inertial *Fusion Energy (IFE)*

- Defense Programs conducting high energy density physics using OMEGA, and NIKE lasers; National Ignition Facility under construction; results are used by Science in designing IFE energy producing targets

- SC developing IFE components for energy applications, especially accelerator-based driver and target chamber technologies

- Developing IFE international collaboration through bilateral agreements

National Research Council Review

- Key Finding: Excellent Science

- Key Recommendations:

  - Organize program around fusion science issues (as well as how to develop a concept into a reactor)

  - Connect with other scientific disciplines to overcome isolation

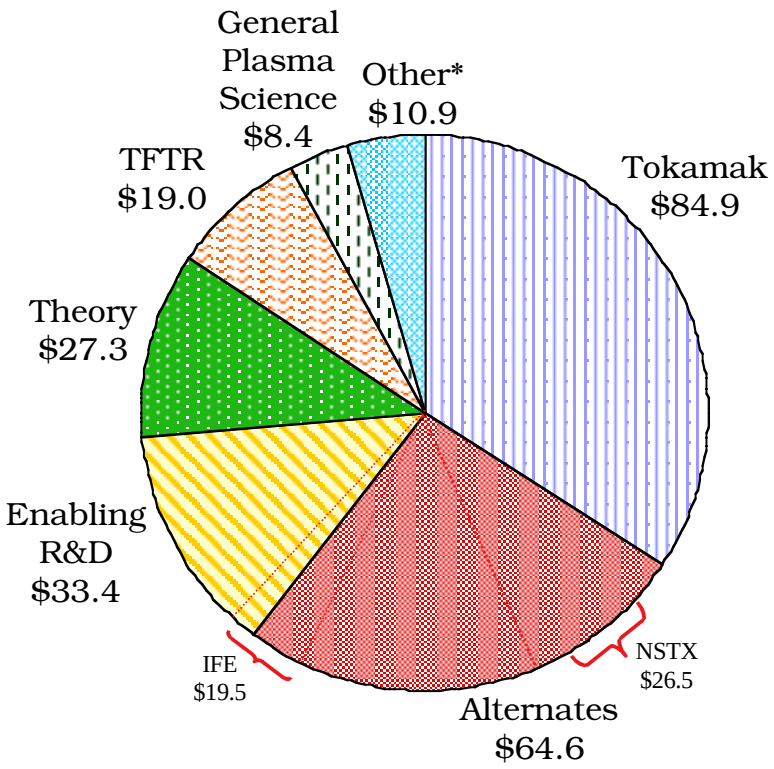
  - Partner with NSF to advance plasma science

Community Input through FESAC Review

- Culmination of other reviews and workshops
- Broad community representation and consensus
- Recommendations for resource allocations
  - Amongst MFE thrust areas
  - Between MFE and IFE
- 'Endorsed' by Congress as guidance for DOE decisions
- Adopted by DOE in allocating FY 2000 and 2001 funds

Fusion Energy Sciences Budget
Shows FY2001 and FY2002 as Similar

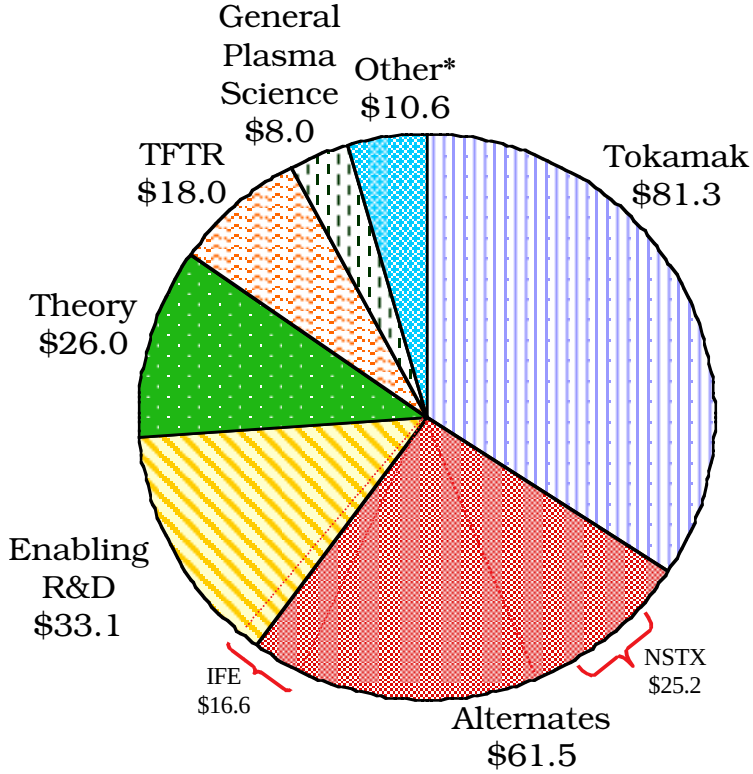
FY 2001
Appropriations



$248.5 M

*Waste Management
SBIR/STTR
GPP/GPE

FY 2002
Congressional Request**

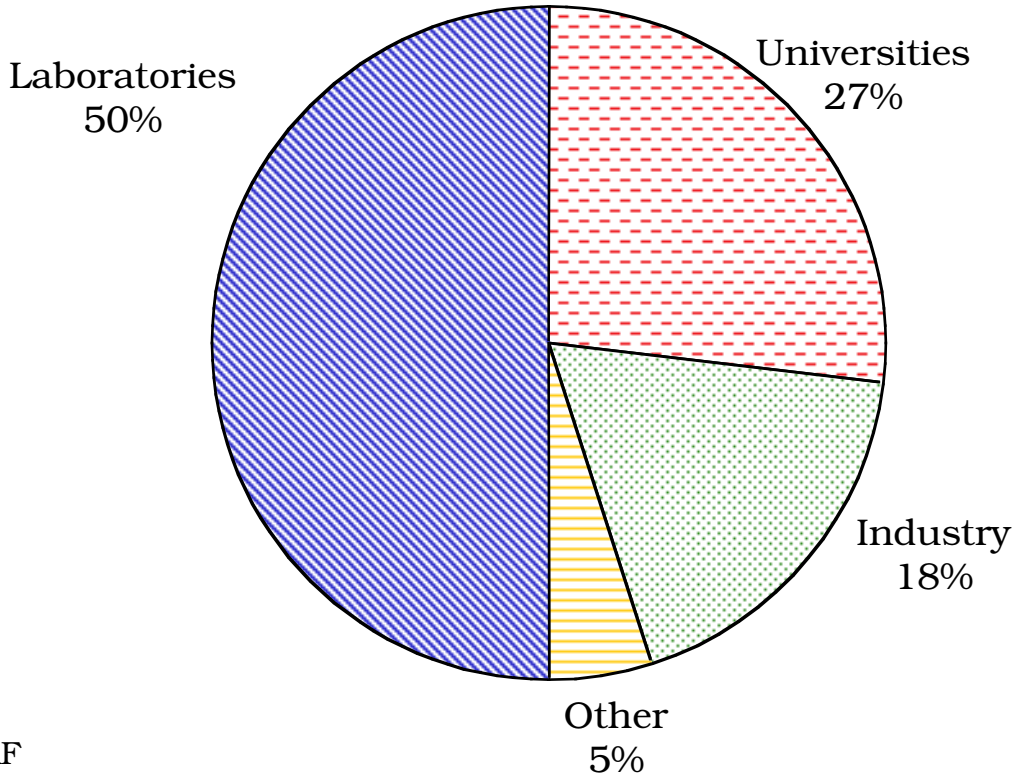


$238.5 M

**We anticipate the submission of a Congressional Budget Amendment to increase the total to $248.5M

Fusion Energy Sciences Funding
Distribution by Institution Type

FY 2001 Appropriations & FY 2002 Congressional Request



*NIST/NSF/NAS/AF
SBIR/STTR
Undesignated

Fusion Energy Sciences Budget 1996 - 2001

(As Spent)

FY 1996	$238.9
FY 1997	$224.7
FY 1998	$224.2
FY 1999	$222.6
FY 2000	$244.7
FY 2001	$248.5

Current Request (to be supplemented through amendment for an additional $10M)

FY 2002	$238.5

Entering the 21st Century

Stronger Program

Broader portfolio

More innovative

Better science

More collaborative

Becoming better integrated

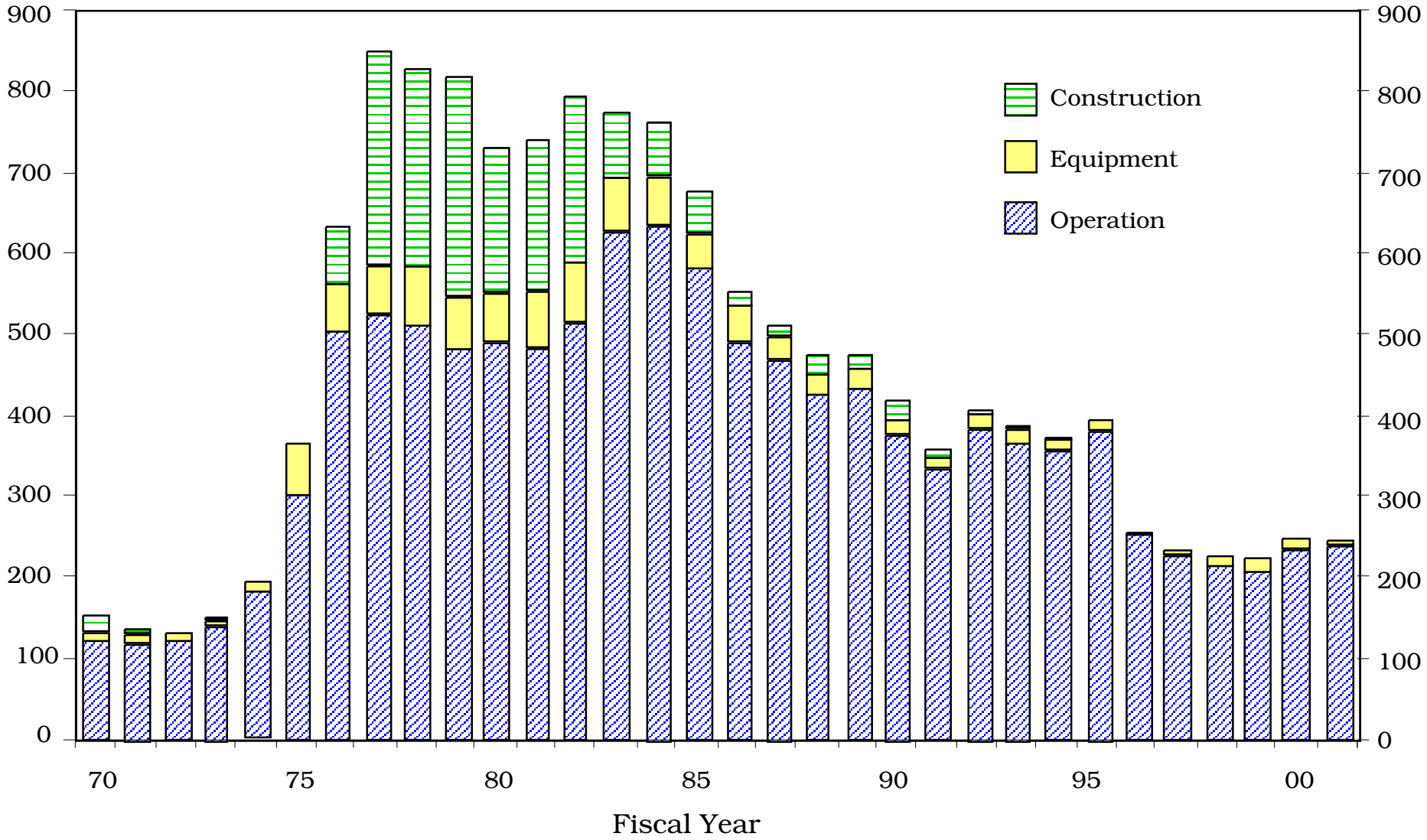
Office of Fusion Energy Sciences Website

http://www.ofes.science.doe.gov/

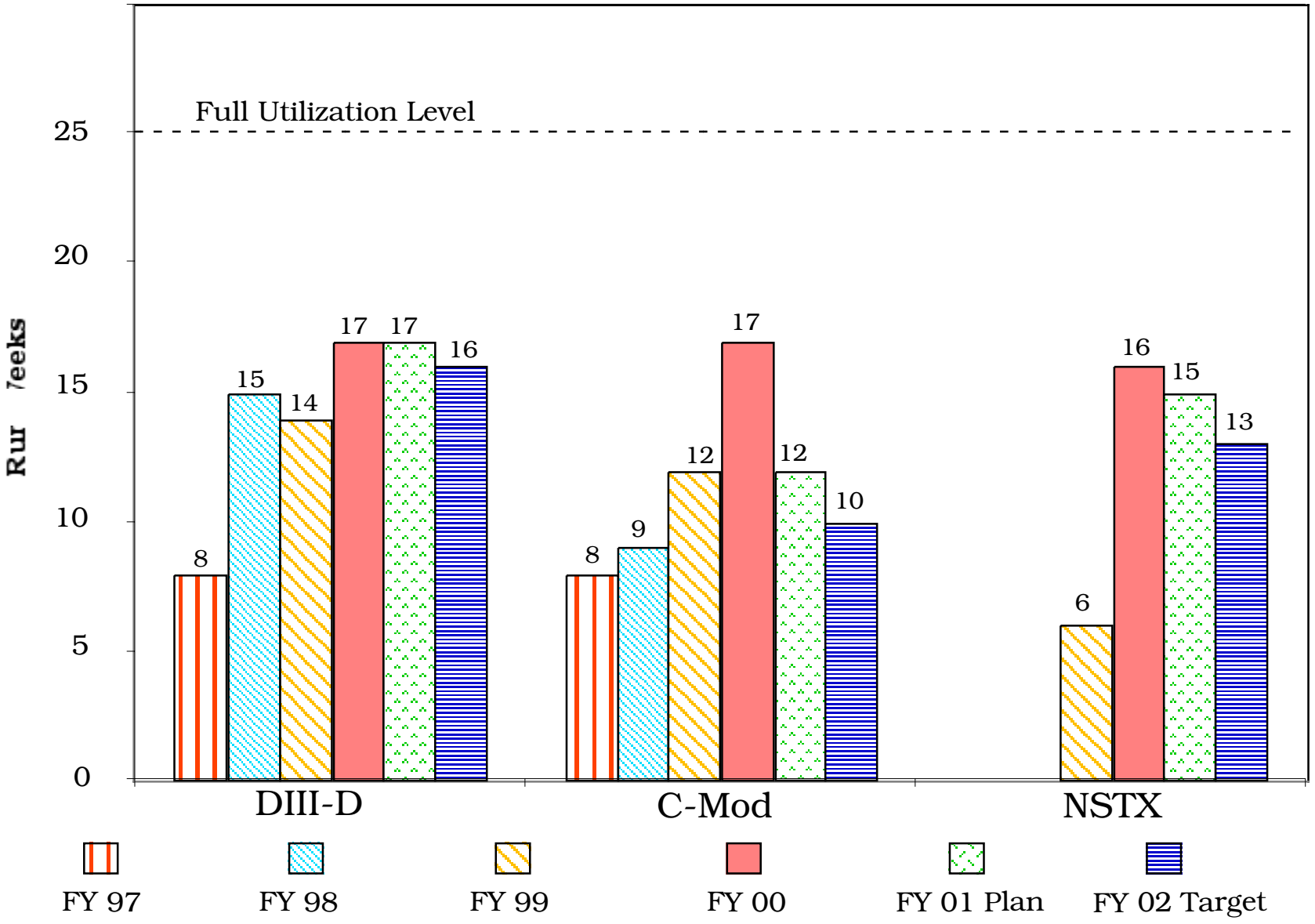
Background

Fusion Energy Sciences Funding

(FY 2001 $ in Millions)



Major Fusion Facility Use



4/01

Objective of the U.S. Fusion Energy Sciences Program